Evaluating the Socioeconomic Impacts of Rapid Assembly and Geospatial Data in Wildfire Emergency Response Planning

A Case Study using the NASA RECOVER Decision Support System (DSS)

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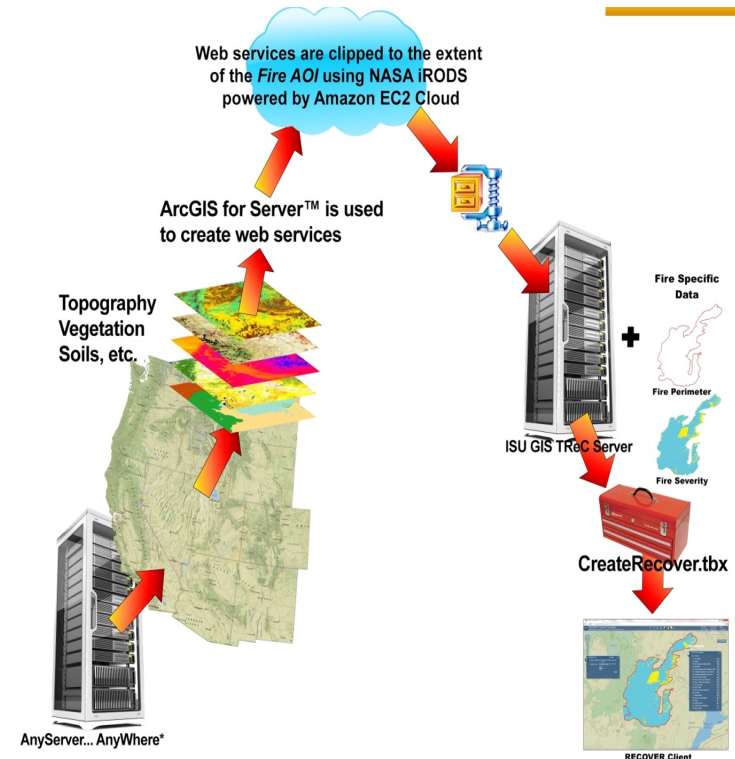
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Background: NASA RECOVER DSS

- Designed as post-wildfire DSS
  - Rapid assembly of site-specific data
  - Delivered in customized GIS analysis environment
- Extensive use of earth observing satellite system imagery & derived products (NDVI, dNBR, LANDFIRE, etc.)

Web services are clipped to the extent of the *Fire AOI* using NASA iRODS powered by Amazon EC2 Cloud

ArcGIS for Server™ is used to create web services

Topography Vegetation Soils, etc.

AnyServer... AnyWhere*

ISU GIS TReC Server

Fire Specific Data

Fire Perimeter

Fire Severity

CreateRecover.tbx

RECOVER Client

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Approach

- Statistical analysis
  - RECOVER has been used to assist in rehabilitation planning for 33 wildfires.
  - Structured stakeholder interviews of RECOVER users.
- Direct benefits
  - Quantify time saved in wildfire rehabilitation planning
  - Monetize the results of RECOVER's use
- Indirect benefits
  - Value of better-informed decisions

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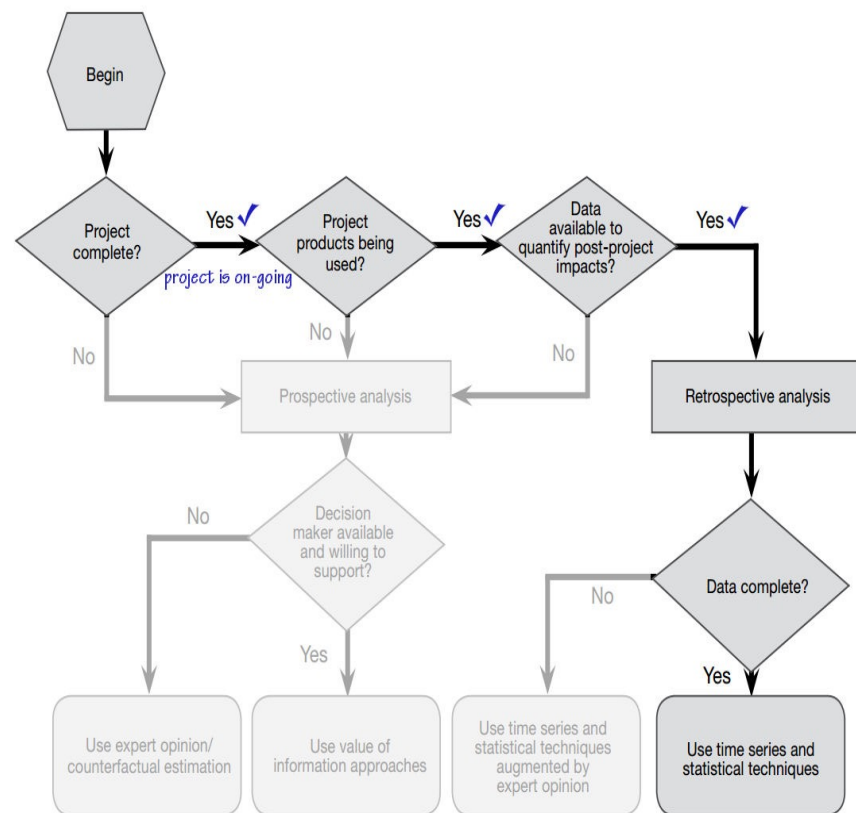
Tier – 1 Users: Land Management Agencies

- Stakeholders:
  - Bureau of Land Management
  - Forest Service
  - Idaho Department of Lands

Tier – 2 Users: Non-Land Management Agencies

- Stakeholders:
  - Bureau of Reclamation
  - National Oceanic and Atmospheric Administration
  - Idaho Fish and Game
  - Department of Transportation

Preliminary Results

- To date, four Tier–1 interviews conducted
  - Results:
    - Time- and cost-savings for decision makers and support staff in developing ES&R and BAER plans:
      - Time saved: up to 40hrs of staff time per fire
      - Cost saved: up to $3K in staff time per fire
    - Value of better-informed decisions:
      - $500K was saved on the "Henry's Creek" fire by using RECOVER DSS

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Future Direction

- Several stakeholder interviews upcoming
  - IDL
  - CalDOT
  - BLM
- Upon completion of interviews:
  - Quantify proximate benefits
  - Conduct qualitative analysis
  - Describe value of information
  - Characterize ultimate benefits

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Future Direction Cont'd

- Prospective analysis question:
  - Increase in wildfire frequency
  - Number of land managers remains the same
  - Will dependence on geospatial data and satellite imagery increase?

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Suggestions or Questions

RECOVER is a NASA Applied Sciences sponsored project. K. T. Weber (PI), J. Schnase (Co-PI), Goddard Space Flight Center, T. Stegner (Co-PI) and E. Lindquist (Co-PI)

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